

CLAIMS

1. A locking device of a closure (2) with a housing (1), particularly of a laboratory centrifuge, comprising
  - at least one swiveling lever (8) pivotally supported about an axis of rotation (7) in the housing (1) including a projecting guide element (9),
  - at least one drive (19) to pivot the swiveling lever (8) about the axis of rotation (7),
  - at least one catch hook (12) supported on the swiveling lever (8) at a spacing from the axis of rotation (7) on a pivot axis (11) which, at a radial spacing from the pivot axis (11), has a cam segment (14) concentric thereto, into which the guide element (9) of the swiveling lever (8) engages,
  - at least one spring means (17) biasing the catch hook (12) in the closing direction until the guide element (9) bears against a first final stop (14') of the cam segment (14), and
  - at least one closing edge (4) of the closure (2) adapted to be gripped over on the closure so that if the catch hook (12) is in an opening position and the swiveling lever (8) is pivoted in the closing direction the spring means (17) holds the catch hook (12) with the first final stop (14') on the guide element (9) in order to pivot the catch hook with the swiveling lever (8) in the closing direction and, if the catch hook (12) impinges on the closing edge (4) and the swiveling lever (8) continues to be pivoted in the closing direction the guide element (9) will move, within the cam segment (14), to a second final stop (14'') thereof, wherein the swiveling lever (8) moves the pivot axis (11) with the catch hook (12) in the closing direction of the closure (2) and, thus, the catch hook (12) pulls the closure (2) into the closing position.

2. The locking device according to claim 1 wherein the swiveling lever (8) substantially is of a circle segment shape.
3. The locking device according to claim 2 wherein the axis of rotation (7) is disposed in the inner angular range of the circle segment shaped swiveling lever (8) and/or wherein the pivot axis (11) is disposed in the vicinity of a lateral limitation of the circle segment shaped swiveling lever (8).
4. The locking device according to any one of claims 1 to 3 wherein the swiveling lever, on a marginal area extending around the axis of rotation in a circle arc shape, has a series of teeth (10) which interacts with a series of teeth (20) of the drive (19) in order to pivot the swiveling lever (8) about the axis of rotation (7).
5. The locking device according to any one of claims 1 to 4 wherein the guide element is a guide pin (9).
6. The locking device according to any one of claims 1 to 5 wherein the guide element (9) is defined by a prolongation of the axis of rotation (7) for supporting the swiveling lever (8).
7. The locking device according to any one of claims 1 to 6 wherein the drive (19) is by an electric motor.
8. The locking device according to any one of claims 1 to 7 wherein a circuit exists which enhances the self-locking action by shortcircuiting the electric motor drive (19) in the locking position.

9. The locking device according to any one of claims 1 to 8 wherein the catch lever (12) has a widened base (13) in which the pivot axis (11) is supported and which, between the pivot axis and an adjoining neck with the hooked end (15), includes the cam segment (14).
10. The locking device according to any one of claims 1 to 9 wherein the catch lever (12) has a fixing point (16) for the spring element (17) on the neck between the cam segment (14) and the hooked end (15).
11. The locking device according to any one of claims 1 to 10 wherein the spring element (17) is held on the housing (1) at the other end.
12. The locking device according to any one of claims 1 to 11 wherein the catch hook (12) is adapted to be moved through a slot-shaped aperture (5) in the upper side of the housing (1) which enables the catch hook (12) to be displaced perpendicular to the upper side of the housing (1) and parallel thereto.
13. The locking device according to any one of claims 1 to 12 wherein the catch hook (12), in the aperture position, does not substantially project beyond the upper side of the housing (19).
14. The locking device according to any one of claims 1 to 3 wherein the closing edge (4) is formed in a region thereof which stands back with respect to the underside of the closure with a cavity existing thereabove.

15. The locking device according to any one of claims 1 to 14 wherein the closure (2) is pivotally supported on the housing (1).
16. The locking device according to claim 15 wherein the catch hook (12) impinges its hooked end (15) on the closing edge (4) in a pivoted position of the closure (2) which is merely a few angular degrees.
17. The locking device according to any one of claims 1 to 16 wherein the closure (2) is adapted to be sealingly pulled by the catch hook (12) against a seal of the housing (1).
18. The locking device according to any one of claims 1 to 17 wherein the pivot axis (11), in the closing position, has been moved beyond a straight line extending through the point of rest of the hooked end (15) on the closing edge (4) and through the guide element (9) to cause a self-locking action.
19. The locking device according to any one of claims 1 to 18 which has several catch hooks (12).